

LITERATURE CITED

Dyrkacz, S. 1981. Recent instances of albinism in North American amphibians and reptiles. Society for the Study of Amphibians and Reptiles, Herpetological Circular 11: 1-31.

Gosner, K. L. 1960. A simplified table for staging anuran embryos and larvae with notes on identification. *Herpetologica* 16: 183-190.

Hensley, M. 1959. Albinism in North American amphibians and reptiles. Publication of the Michigan State University Museum, Biological Series. 1: 133-159.

Luce, D., & J. J. Moriarty. 1999. Natural history: *Rana sylvatica*. *Herpetological Review* 30: 94.

Ruthven, A. G. C. Thompson, & H. T. Gaige. 1928. The Herpetology of Michigan. Michigan Handbook series No. 3. Michigan University Museums. Ann Arbor, MI. 229 pp.

Vogt, R. C. 1981. Natural History of Amphibians and Reptiles of Wisconsin. Milwaukee Public Museum, Milwaukee, WI. 205 pp.

Wright, A. H. 1914. Life-histories of the Anura of Ithaca, New York. Carnegie Institute of Washington, Washington, DC. 98 pp.

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ANOPHTHALMIA IN AN UPLAND CHORUS FROG (*PSEUDACRIS FERIARUM FERIARUM*) FROM SOUTHEASTERN VIRGINIA—Abnormalities and malformations of eyes and limbs are well documented in North American frogs in the genus *Rana* (e.g., Ouellet et al., 1997; Meteyer, 2000; Meteyer et al., 2000) but they are less well known for other families. Banta (1968) described a case of anophthalmia

in the Eastern Gray Treefrog (*Hyla versicolor*) that occurred during metamorphosis. Smith & Powell (1983) reported an adult *Acris crepitans* with a missing eye from Missouri. Two Northern Green Frogs (*Rana clamitans melanota*), one each from the City of Arlington and Fairfax County in Virginia, both of which were missing an eye, are listed in the North American Reporting Center for Amphibian Malformations website (<http://frogweb.nbi.gov/narcam/>). This database includes several observations of anophthalmia and other eye deformities in frogs and salamanders (e.g., *Ambystoma maculatum*, *Bufo americanus*, *Rana catesbeiana*, *R. clamitans*), but details allowing assessment of whether they were congenital or derived from injuries are unavailable.

On 3 March 2002, we found an adult male *P. feriarum* (27 mm SVL) missing its left eye and orbit in a mixed hardwood (*Acer rubrum*, *Liquidambar styraciflua*, *Ilex opaca*) swamp in the riparian zone of Beaverdam Creek, Colonial National Historical Park, 3.5 km S Yorktown, York County, Virginia (Fig. 1). This was the only malformed frog found among 17 *P. feriarum*, two *Pseudacris crucifer*, two *Rana sphenoccephala*, and one *Rana palustris* captured at this location. Normally pigmented and patterned skin entirely covered the orbit, and the frog did not appear injured, scarred, or unusual except for the missing eye. Thus, the abnormality appears to be congenital. This is the first report of anophthalmia for *Pseudacris feriarum*.

LITERATURE CITED

Banta, B. H. 1968. A supernumerary forelimb on a Spring Peeper, *Hyla crucifer crucifer* Wied (Amphibia: Salientia) from south central Michigan. *Wasmann Journal of Biology* 26: 263-265.

Meteyer, C. U. 2000. Field Guide to Malformations of Frogs and Toads with Radiographic Interpretations. U.S. Geological Survey, Biological Science Report, USGS/BRD/BSR-2000-0005, Madison, WI. 18 pp.

Meteyer, C. U., I. K. Loeffler, J. G. Burkhart, K. A. Converse, E. Green, J. C. Helgen, S. Kersten, R. Levey, L. Eaton-Poole, & J. F. Fallon. 2000. Hind limb malformations in free-living Northern Leopard Frogs (*Rana pipiens*) from Maine, Minnesota and Vermont suggest multiple etiologies. *Teratology* 62: 151-171.

Ouellet, M., J. Bonin, J. Rodrigue, J.-L. DesGranges, & S. Lair. 1997. Hindlimb deformities (ectromelia, ectrodactyly) in free-living anurans from agricultural habitats. *Journal of Wildlife Diseases* 33: 95-104.



Fig. 1. Adult male *Pseudacris feriarum* with left-side anophthalmia from York County, Virginia.

Smith, D. D., & R. Powell. 1983. Life history: *Acris crepitans blanchardi* (Blanchard's Cricket Frog) anomalies. Herpetological Review 14: 118-119.

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BILATERAL ECTROMELIA IN A NORTHERN CRICKET FROG (*ACRIS CREPITANS CREPITANS*) METAMORPH FROM VIRGINIA—Most malformations in frogs have been reported for metamorphs or juveniles (e.g., Ouellet et al., 1997; Meteyer, 2000; Meteyer et al., 2000). Deformities in tadpoles are occasionally reported based on experimental work or from contaminated environments (Rowe et al., 1998). In the genus *Acris*, polydactyly in *A. gryllus* was reported from Florida by Christman (1970) and malformations consisting of a missing eye and subcutaneous bloating derived from a herniated small intestine were described for *A. c. blanchardi* in Missouri by Smith & Powell (1983). Gray (2001) noted

that 39 of 9,987 recently metamorphosed *A. c. blanchardi* froglets from Illinois had missing limbs and digits and deformed or extra limbs, digits, or mouthparts. The North American Reporting Center for Amphibian Malformations website (<http://frogweb.nbii.gov/narcam/>) reports four species of ranids and an American toad (*Bufo americanus*) with multiple legs but none with ectromelia (missing limbs). No reports concern tadpoles. Here we report the first documented observation of ectromelia in a metamorphic *A. crepitans crepitans*.

On 29 July 2003, we captured a 30 mm total length *Acris c. crepitans* tadpole in a tire rut pool in a clearcut on Fort Lee (U.S. Army), Prince George County, Virginia (UTM 4126859 N, 18s 293184 E, NAD 83). Both of the anterior limbs were fully formed with complete development of both hands and digits. Both rear limbs were absent, with only small, fleshy stumps at the point of emergence from the body (Fig. 1). There was no evidence of predation or injury. The dark areas on the stumps are melanophores; there is no bone tissue exposed. We interpret this observation as an instance of congenital bilateral ectromelia. Twenty other *A. crepitans* tadpoles with rear legs only were also captured at this site, as were two metamorphs with



Fig. 1. *Acris c. crepitans* tadpole from Virginia with bilateral ectromelia.